SIM CITY™

THE CITY SIMULATOR

USER DOCUMENTATION
COMMODORE 64/128
VERSION 1.0

MAXIS

SimCity™
THE CITY SIMULATOR

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Dedicated to Cassidy

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INTRODUCTION

FOREWORD

Enter SimCity and take control. Be the undisputed ruler of a sophisticated real-time City Simulation. Become the master of existing cities such as San Francisco, Tokyo, and Rio de Janeiro, or create your own dream city (or dream slum) from the ground up.

Whether you take over an existing city or build your own, you are the Mayor and City Planner with complete authority.

Your city is populated by Sims - Simulated Citizens. Like their human counterparts, they build houses, condos, churches, stores and factories. And, also like humans, they complain about things like taxes, mayors, taxes, city planners, and taxes. If they get too unhappy, they move out; you collect less taxes, the city deteriorates.

The next few sections will explain the overall concept of SimCity and give information that will help you win Scenarios and design and build better cities.

ABOUT SYSTEM SIMULATIONS

SimCity is the first of a new type of entertainment/education software, called SYSTEM SIMULATIONS. We provide you with a set of RULES and TOOLS that describe, create and control a real or imaginary System. In the case of SimCity the System is a City.

The challenge of playing a SYSTEM SIMULATION game is to figure out how the system works and take control of it. Then, as master of the System you are free to use the TOOLS to create and control an unlimited number of Systems - Cities - within the framework and limits provided by the RULES.

In SimCity, the RULES to learn are based on city planning and management; resource management, factors influencing land value, human factors, strategies for dealing with disasters, unemployment, crime and pollution, and the quality of life in a city.

Some of the TOOLS provide you with the ability to:
plan, layout, zone, bulldoze and re-zone a city,
build roads, airports and sea ports,
set up and maintain a power grid,
even wreak havoc and cause destruction by unleashing natural disasters.

But the most important TOOL of all is the Simulator itself. Test your plans and ideas as you watch the city grow or shrink through the immigration and emigration of industrious Simulated Citizens. Sims will move in and build homes, hospitals, churches, stores and factories, or move out in search of jobs or a better life elsewhere. The success of a city depends on your design and management skills.

THE GOALS OF SimCity

There are many goals to be pursued and reached in SimCity.

SCENARIOS

Each of the eight included Scenarios is actually a game in itself, with an unlimited number of ways to win - or lose.

Each Scenario is a city which is either the victim of horrible planning or about to be the victim of a natural disaster. After you load in a Scenario, you will have a limited amount of time to correct or repair the problems. If you are successful you will be given the key to the city. If not you may be ridden out of town on a rail.

If one strategy doesn't work, try another. And another. There are a million stories in each SimCity, and you write them.

YOUR DREAM CITY

Perhaps the main goal of SimCity is for you to design, manage and maintain the city of your dreams.

Your ideal place to live may be a bustling megalopolis, lots of people, lots of cars, tall buildings; high-energy, high-density living. Or it may be a small rural community, or a linked group of small communities providing slow paced country living.

As long as your city can provide places for people to live, work, shop and play, it will attract residents. And as long as traffic, pollution, overcrowding, crime or taxes don't drive them away, your city will live.

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MAP SCREEN

DENSITY
COLOR
KEY

MAP

EDIT
RECTANGLE

TITLE
BAR

MAP SCREEN

MAP
SCREEN
MENU

EDIT SCREEN

EDIT
MAP

TITLE
BAR

EDIT SCREEN

EDIT
SCREEN
MENU

COST   1000

FUNDS 4000

COST
BAR

FUNDS
BAR
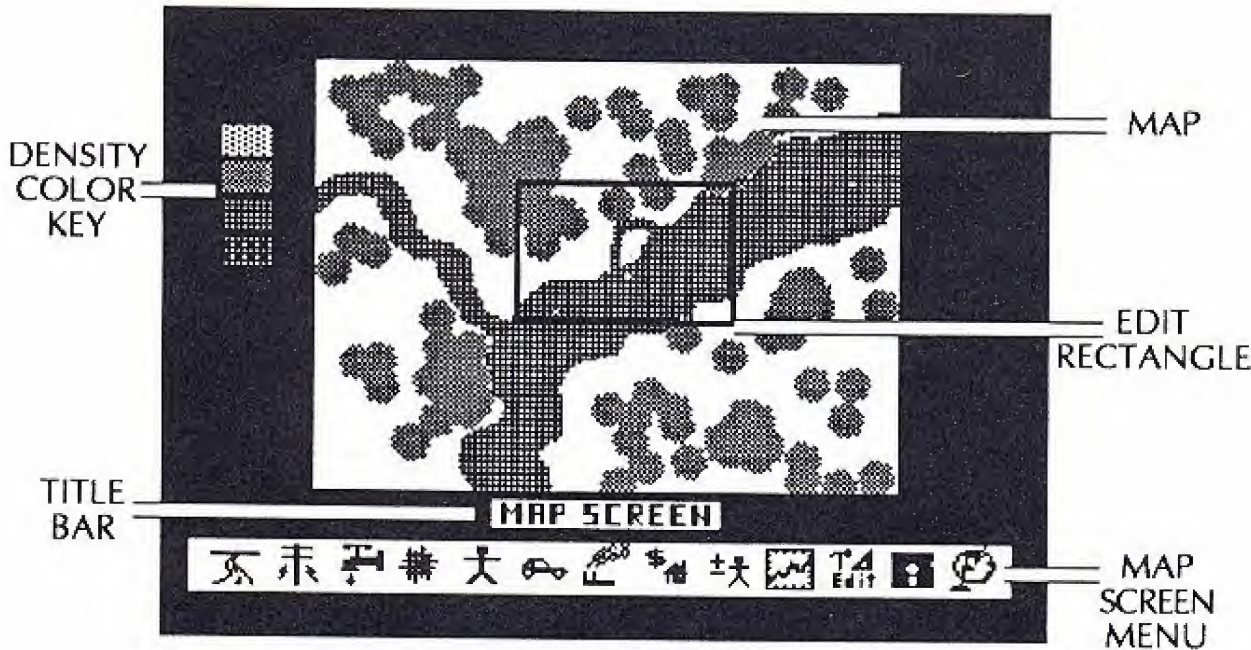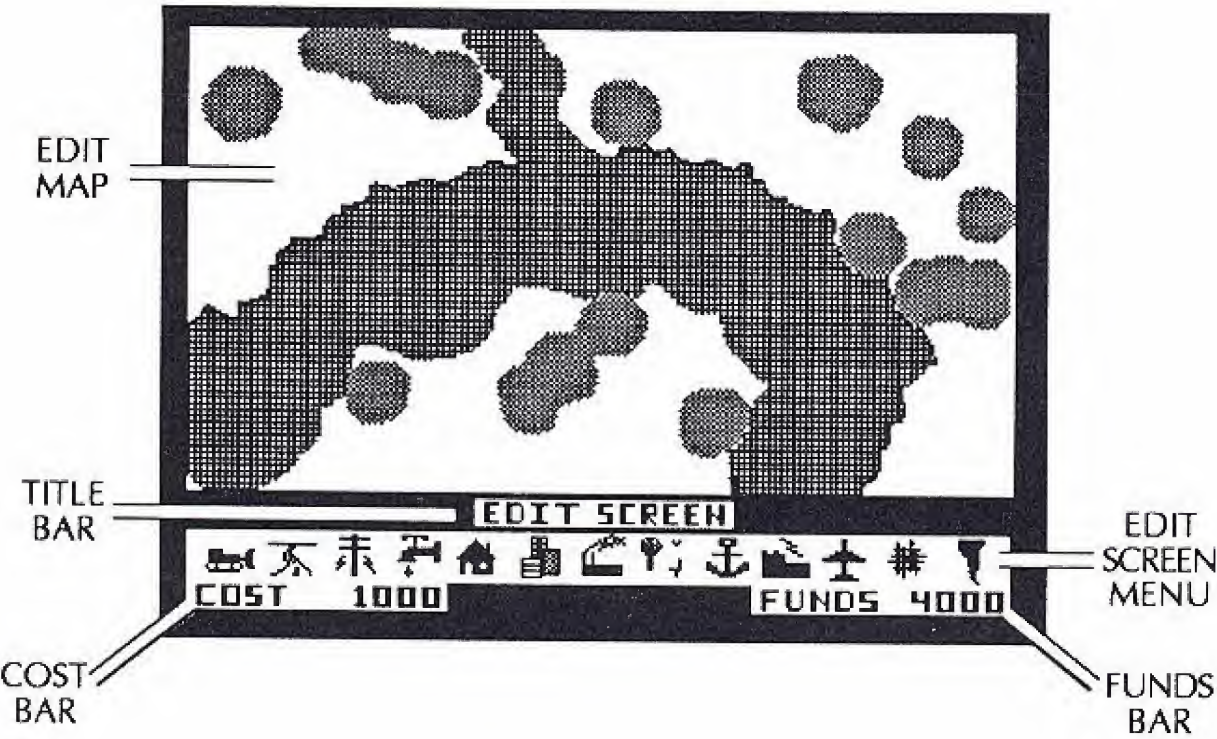
GETTING STARTED

THE PROGRAM DISK AND DATA DISKS

The SimCity Program disk includes the programs that make up SimCity as well as eight pre-existing Scenario Cities that you can load and run.

As you create new cities of your own, you will want to save them to disk for later use. To do this you will need at least one data disk. You can fit up to 16 cities on a disk.

To initialize a data disk, put a new floppy disk in your drive, and type

OPEN 15,8,15,"N0:CITY DISK 1,C1" then press the **RETURN KEY.**

You may use other names than CITY DISK 1 if you wish, and other disk ID's than C1. But be careful not to change anything else or your disk may not properly format. Also be sure to give each disk you format a different disk ID (see your Commodore Disk Drive manual for more information).

You must use the Program Disk to start SimCity, but the less you use it for data storage the longer it will last. We suggest that once you have loaded in a city from the Program Disk, you save it onto a separate data disk for future use.

RUNNING SIMCITY

Before starting SimCity, connect a joystick to Control Port 2.

To start SimCity, place the Program Disk in the disk drive.

Type **LOAD"SC",8,1** then press the **RETURN KEY.**

SimCity takes about a minute to load.

TUTORIAL - A WALK THROUGH YOUR CITY

We will now take a quick tour of SimCity, covering the basic functions and controls.

It will be helpful if you refer to the USER REFERENCE CARD included in the SimCity box. The MENU MAP side of the card will help you find your way around SimCity's menus and screens. The other side, CITY DYNAMICS, will be of more help later when you are designing and building your own cities.

When the program has finished loading, you will be looking at the MAP SCREEN.

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This is your main base of operations, where you have an overview of your city and its terrain. Here you can view various physical and demographic maps of your city. From here you can bring up the DISK ACCESS MENU to load in or save cities, and the TERRAIN MENU to regenerate and customize the terrain on which your city is built. From here you can also access the EDIT SCREEN where the actual zoning and building takes place.

The main portion of the MAP SCREEN is THE MAP, a large green, grey and blue square. This is the map of your entire city limits; the terrain upon which you will build a city. The blue is water, the green is forest area, and the grey is open land.

When you first start SimCity a new terrain is always generated. You always have the option of using this terrain, generating a new one, modifying the terrain, or wiping it clear and designing your own from scratch (see TERRAIN MENU in the USER REFERENCE section of this manual).

Along the bottom of the screen is the MAP SCREEN MENU. Each icon (small picture) represents either a different map view, or different MENU or SCREEN to go to. A small white rectangle, or HIGHLIGHT, around an icon indicates that it is active. Just above the menu is the TITLE BAR. It is visible in all screens and gives helpful information about screens and menu items.

The CURSOR KEYS move the Highlight on the menu, allowing you to make menu choices. While in SimCity, ignore the arrows on the Cursor Keys: the left key moves the Highlight left, the right key moves the highlight right.

You may notice that moving the highlight across the menu doesn't seem to do much. Don't worry. Most of these choices are maps that don't show up until you have some city built. We'll come back to this later.

In the middle of the map is a white rectangle, the EDIT RECTANGLE. When you enter the EDIT SCREEN to begin zoning and building, you will see a close up view of the area in the rectangle. You can move the EDIT RECTANGLE around the map with the JOYSTICK (be sure it is in Control Port 2). If you press and hold down the JOYSTICK BUTTON, you will temporarily zoom to the EDIT SCREEN, and see a close up view of the area in the EDIT RECTANGLE. Release the Joystick Button to return to the MAP SCREEN. This function allows you to quickly tour a city or explore terrain to plan a future city.

Using the Joystick, move the rectangle to an area of the map that has green, blue and grey terrain.

To actually edit an area - zoning and building a city - you will have to select the EDIT SCREEN from the menu.

Using the Cursor Keys, move the highlight to the EDIT Icon ⬛ and press the Return Key. You now see the EDIT SCREEN.

At the top of the screen is the EDIT MAP - a close up view of the terrain in the EDIT RECTANGLE. Near the bottom of the screen is the EDIT SCREEN MENU.

Use the Joystick to scroll the terrain around below you. Find an area with lots of clear land to start zoning.

To begin a city we need three things: places for Sims to live, places for Sims to work, and power.

You can only zone on clear land (grey). You can clear trees (green) and shoreline for zoning with the BULLDOZER.

Using the Cursor Keys, highlight the BULLDOZER Icon. The POINTER is now visible in the middle of the EDIT MAP. This shows the area that the BULLDOZER function will affect. To move the area to be bulldozed, use the Joystick to scroll the terrain under the POINTER.

Place the POINTER over trees. Press the Joystick button. The area under the POINTER is now clear land. Clear a large section for zoning.

Each building and zoning function has a price. At the lower left corner of the screen is the COST BAR that tells you the cost of a selected function. At the lower right corner of the screen is the FUNDS BAR that tells you how much money you have left.

Now use the Cursor Keys to highlight the RESIDENTIAL ZONE Icon. RESIDENTIAL ZONES are where Sims live. Note that the POINTER is now a larger rectangle. This shows the size and location of the RESIDENTIAL ZONE.

Using the Joystick, pick a spot to zone and press the Joystick Button. You will see a rectangle with an "R" in it. This is a RESIDENTIAL ZONE. There is also a flashing "P" in the zone. This indicates that the zone   has no power.

Highlight the COMMERCIAL ZONE Icon, and using the Joystick and Joystick Button place a COMMERCIAL ZONE adjacent to the RESIDENTIAL ZONE. COMMERCIAL ZONES are where Sims work, and shop, and build stores, gas stations, offices, etc.

If there are trees there, you will not be able to zone the area. Use the Bulldozer to clear the terrain, then place the zone.

Now place an INDUSTRIAL ZONE adjacent to the COMMERCIAL ZONE. These zones are where Sims build factories and heavy industry.

Once again, you may have to clear the land to make room for the zone.

Now you need power. Highlight the POWER PLANT Icon. Notice that it is larger than the other zones. Place the POWER PLANT near the INDUSTRIAL ZONE.

Power is transmitted through adjacent zones. If the POWER PLANT is not adjacent to a zone, then you must run POWER LINES.

Highlight the POWER LINE Icon and, using the Joystick and Joystick Button, run a POWER LINE from the POWER PLANT to the zones. POWER LINE sections automatically connect, turn, and make intersections.

Soon after you connect power to a zone, the flashing "P" will disappear, and Sims will begin to build. First, small houses and shops will be built in the zones, then the building speed and density will increase.

NOTE YOU do the zoning, but the Sims move in and do the actual building. You must design your city to attract Sims to move in and stay.

Make sure all zones are powered. Once zones begin to develop, you can collect taxes. This is done automatically. You will receive a message in the TITLE BAR notifying you that taxes have been collected, and the money will be added to your existing funds and displayed in the FUNDS BAR. The larger the city, and the higher the property values, the more taxes you will collect.

To speed up development you will need roads. Highlight the ROADS Icon. L a y roads so the Sims can easily get from home to the stores in the COMMERCIAL ZONES, the factories in the INDUSTRIAL ZONES, and the POWER PLANT.

ROADS are placed in the same way as POWER LINES. ROAD sections automatically connect, turn, and make intersections. Once roads have been placed, you will soon see traffic.

ROADS and POWER LINES cannot be placed on top of each other, but can cross each other perpendicularly.

Now highlight the MAP SCREEN Icon and press the Return Key to return to the MAP SCREEN. Now move the highlight across the menu and view the various maps. You will see the size and location of your new zones.

Now highlight the DISK ACCESS MENU Icon and press Return. Use the Cursor Keys to highlight the CATALOG option, and press Return. You will be shown a directory of the cities that come with SimCity. Choose a city to explore, and press any key on the keyboard to return to the DISK ACCESS MENU. Highlight the LOAD option and press Return. Enter the name of the city you chose, then press Return again. The city will load, replacing the one you have started to build.

Once the city has loaded, highlight the EXIT option and press the Return Key to return to the MAP SCREEN MENU.

Use the Cursor Keys to highlight and view the various maps of the city. Use the Joystick and Joystick Button to explore the city.

More information on the city can be gained by viewing the graphs available on the GRAPH SCREEN (see GRAPH SCREEN, USER REFERENCE section).

This is all the basic information you need to begin using SimCity, but we suggest reading on. The USER REFERENCE explains in detail how to use each program function. INSIDE SimCity explains the inner workings of the simulator, and gives hints and tips for using it. There is also an essay on The History of Cities and City Planning, and a Bibliography for serious City Planners.

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MAP SCREEN

DENSITY COLOR KEY

MAP

EDIT RECTANGI

TITLE BAR

MAP SCREEH

MAP SCREEN MENU
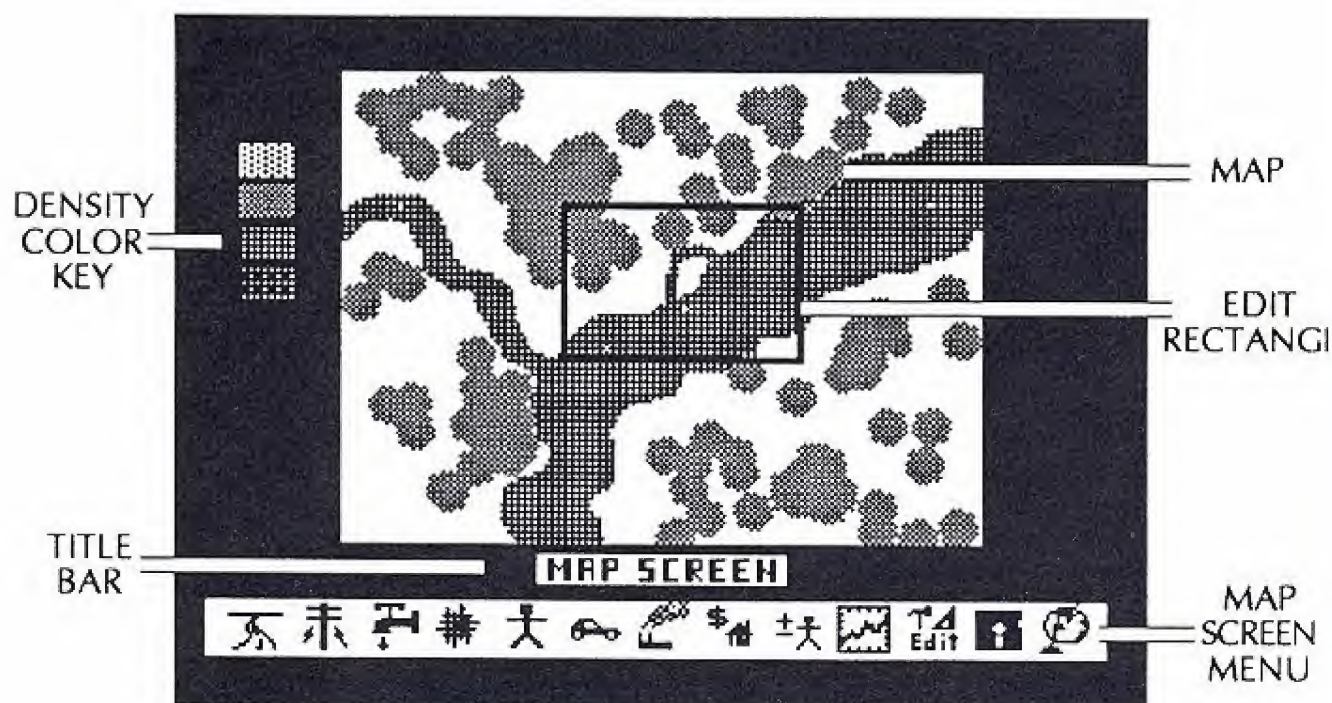
ROAD MAP	LAND VALUE MAP
POWER GRID MAP	RATE OF GROWTH MAP
WATER MAP	GRAPH SCREEN
CITY MAP	EDIT SCREEN
POPULATION DENSITY MAP	DISK ACCESS MENU
TRAFFIC DENSITY MAP	TERRAIN MENU
POLLUTION INDEX MAP	

USER REFERENCE

INTRODUCTION

The following is a complete technical description of all screens, menus, functions and controls used in SimCity.

THE MAP SCREEN

The MAP SCREEN is your main base of operations. It gives you an overview of your city and its terrain.

Here you can view various physical and demographic maps of your city, activate the DISK ACCESS MENU and the TERRAIN MENU, go to the GRAPH SCREEN for viewing time based graphs of city data, and go to the EDIT SCREEN for zoning and building.

THE MAP

The main portion of the MAP SCREEN is the MAP. The Map is a large square with green, grey and blue areas. This displays your entire city limits, representing approximately a 10 mile by 10 mile area.

The Blue area is water, the green area is forest, and the grey is open land.

When you first start SimCity a new Map is always generated. You have the option of using the Map as is to start a new city, replacing or modifying the terrain (see TERRAIN MENU), or loading in an existing city from disk (see DISK ACCESS MENU).

THE EDIT RECTANGLE

On the map is a white rectangle. This is the EDIT RECTANGLE. It shows the portion of the map that will be visible in the EDIT SCREEN.

The EDIT RECTANGLE can be moved around the map with the Joystick.

MAP SCREEN CONTROLS

The main controls used in the MAP SCREEN are the JOYSTICK, the JOYSTICK BUTTON, the two CURSOR KEYS and the RETURN KEY.

Other Keyboard Keys are only used in the DISK ACCESS MENU to name cities to be saved or loaded.

THE JOYSTICK

The Joystick should be plugged into Joystick Port 2. In the MAP SCREEN, the Joystick moves the EDIT RECTANGLE around the map, selecting and outlining the area that will be visible in the EDIT SCREEN.

THE JOYSTICK BUTTON

While in the MAP SCREEN, the Joystick Button is a TEMPORARY ZOOM to the EDIT SCREEN. You will be in the EDIT SCREEN only as long as the button is pressed down. Releasing the button zooms you back to the MAP SCREEN. During the TEMPORARY ZOOM to the EDIT SCREEN, no editing may be done, but the Joystick can be used to scroll the terrain below you.

Using the Joystick and Joystick Button allows you to quickly and easily tour a city or empty terrain. This is useful for scouting building locations, inspecting damage from natural disasters, or just exploring.

THE CURSOR KEYS

The Cursor Keys are used to make menu choices. In SimCity, ignore the direction arrows on the keys: the left key makes the highlight on the menu go left, the right key makes the highlight go right.

All SimCity menus wrap around. If you force the highlight off one side of the menu, it will reappear at the other side.

THE RETURN KEY

To select most menu items, you only need to highlight the item using the Cursor Keys. If, however, the item causes the Screen or the Menu to change, then you must highlight the item and press the Return Key.

THE TITLE BAR

Between the map and the menu is the TITLE BAR. It contains a message or explanation for each menu option.

THE MAP SCREEN MENU

The MAP SCREEN MENU has thirteen items: four PHYSICAL MAPS, five DEMOGRAPHIC MAPS, two alternate MENUS, and two other SCREENS.

PHYSICAL MAPS

These are maps of the land and city physical structure.

ROAD MAP is a street map of the city. Use this map to examine traffic access to all parts of the city and plan further expansion.

POWER GRID MAP gives you an overview of the city's power grid. Use this map to plan expansion and to locate areas where power has been lost. Zones appear as rectangles on the map. In unpowered zones the rectangle is missing its lower side.

WATER MAP shows the waterways of your city, both natural and man-made, and indicates where bridges and power lines cross the water.

CITY MAP shows all roads, zones and developed areas in black. Use this map to find undeveloped areas and plan zoning expansion.

DEMOGRAPHIC MAPS

These are maps that display the dynamic balance of the city and population. When one of these maps is selected, a DENSITY COLOR KEY will appear on the screen to the left of the map. The color at the top (red) indicates highest density, growth or value, depending on the map selected. The color at the bottom (black) indicates the lowest density, growth or value.

POPULATION DENSITY MAP displays the average number of people occupying an area each day. Use this map to locate under-utilized areas and overpopulated areas.

TRAFFIC DENSITY MAP shows the amount of traffic on the roads. Spot traffic problems and determine where new roadways are needed.

POLLUTION INDEX MAP shows levels of pollution throughout the city. Pollution is generated primarily by industry and traffic.

LAND VALUE MAP shows the relative value of land within the city limits. Land values are used to establish the amount of revenue generated by taxes.

RATE OF GROWTH MAP shows the most recent growth (positive or negative) of your city, and where it is occurring.

ALTERNATE MENUS

These menu choices bring up new menus for additional functions and controls. To activate these items, use the Cursor Keys to highlight them and press the Return Key.

DISK ACCESS MENU brings up the DISK ACCESS MENU, which allows you to perform disk and file related functions.

TERRAIN MENU, once activated, provides the tools to regenerate and modify the terrain.

OTHER SCREENS

These menu choices bring up new Screens. To activate these Screens, use the Cursor Keys to highlight them and press the Return Key.

GRAPH SCREEN brings up the GRAPH SCREEN, which gives you time-based graphs of various city data.

EDIT SCREEN brings up the EDIT SCREEN, where you do your actual zoning and building.

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THE DISK ACCESS MENU

LOAD	SAVE	CATALOG	EXIT

The DISK ACCESS MENU, accessed through the MAP SCREEN MENU, gives you access to the disk drive for loading and saving cities. To activate a function, highlight it with the Cursor Keys and press the Return Key. Like all SimCity menus, if you force the highlight off one side of the menu, it will wrap around to the other side.

LOAD loads in an existing city from the disk in the disk drive. When you select this function, you will be asked to enter the name of the city you wish to load (ENTER NAME [ ) Type in the name of the city at the prompt and press the Return Key to begin loading.

If you type in a city that is not on the disk, or spell it wrong, you will have to start the LOAD procedure over. If you are not sure of the spelling, or don't know if this is the right disk, use CATALOG to view the disk directory.

If you activate LOAD by accident or change your mind, just press Return without typing a name at the ENTER NAME prompt. This will cancel the LOAD function.

SAVE saves the city-in-progress to the disk in the disk drive. When you select this function, you will be asked to enter the name under which you wish to save the city. Type in the name at the prompt, and press Return.

Be careful not to save two cities under the same name. The newer one will be saved and the older one will be lost.

Be careful not to turn off the computer or the disk drive, or remove the disk from the drive before the save function is complete. The city you are trying to save will be lost.

You may wish to save one city in more than one stage of development, or one terrain with different city building strategies. Be sure to use a different name for each city or terrain version you wish to keep.

If you activate SAVE by accident or change your mind, just press Return without typing a name at the ENTER NAME prompt. This will cancel the SAVE function.

CATALOG gives you a directory of the cities on the disk in the disk drive. Use this to locate the city you want to load, to check proper spelling for cities, and avoid saving a new city over an old one by accident.

To activate CATALOG, use the Cursor Keys to highlight the selection, and press the Return Key. The cities on the disk in the disk drive will be displayed at the bottom of the screen.

Pressing any key on the keyboard will return you to the DISK ACCESS MENU.

EXIT returns you to the MAP SCREEN MENU.

THE TERRAIN MENU

CREATE NEW TERRAIN	EDIT TERRAIN	EXIT

The TERRAIN MENU, accessed through the MAP SCREEN MENU, supplies the tools and functions to modify the Terrain. Highlight the desired function with the Cursor Keys, and press the Return Key to activate.

CREATE NEW TERRAIN generates and displays a new randomly generated Terrain. You may repeat this function until you generate a Terrain you want.

> ****WARNING**** This function will completely destroy the Terrain and city-in-progress. If there is a city presently in memory that you wish to use later, SAVE it before activating this function.

EDIT TERRAIN brings up the TERRAIN EDITING MENU.

EXIT returns you to the MAP SCREEN MENU.

THE TERRAIN EDITING MENU

CLEAR MAP	LARGE RIVER	SMALL RIVER	LARGE TREES	SMALL TREES	EXIT

The TERRAIN EDITING MENU, accessed through the TERRAIN MENU, gives you the ability to clear and/or modify an existing Terrain.

CLEAR MAP removes all features of a Terrain or city and leaves you with nothing but grey open land. To activate, highlight with the Cursor Keys and press Return.

> ****WARNING**** This function will completely destroy the Terrain and city-in-progress. If there is a city presently in memory that you wish to use later, SAVE it before activating this function.

LARGE RIVER, SMALL RIVER, LARGE TREES and **SMALL TREES** are TERRAIN PAINTING FUNCTIONS. You create, or paint, the trees and rivers onto the Terrain using the EDIT RECTANGLE as your paintbrush. The upper left corner of the EDIT RECTANGLE is the tip of the paintbrush.

GRAPH SCREEN

GRAPH
AREA

GRAPH

TIME LINE

-10   -5   0

GRAPH SCREEN

TITLE
BAR

大　　　☺　☹　◐　井
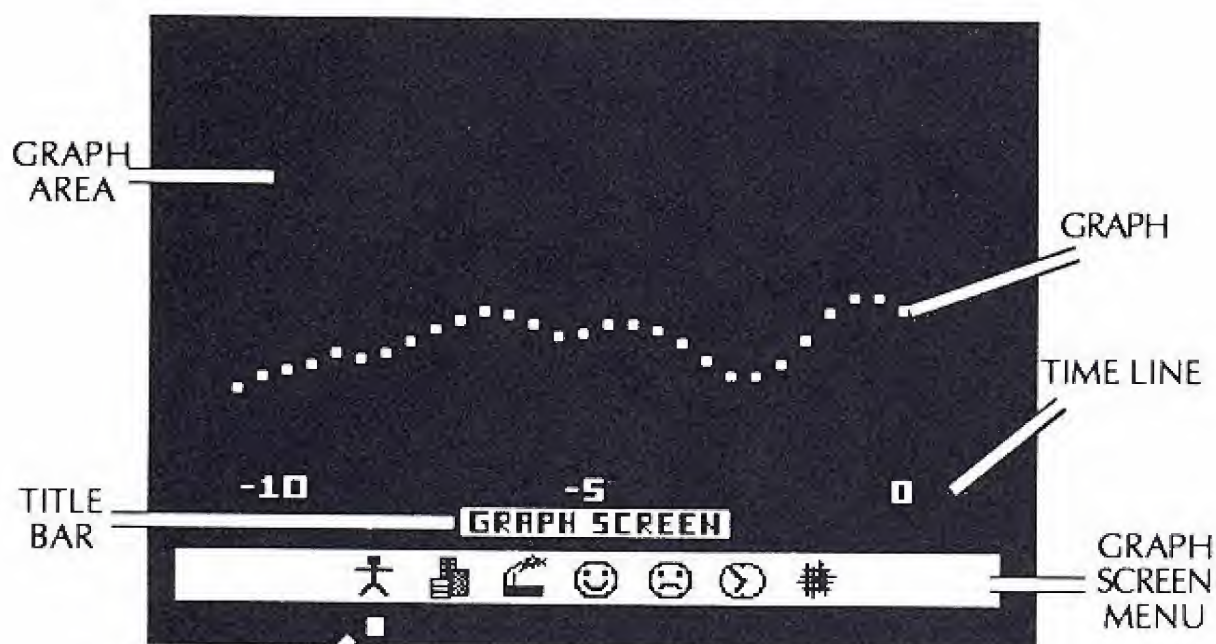
GRAPH
SCREEN
MENU

ACTIVE
GRAPH
INDICATOR

大 POPULATION GRAPH

COMMERCE GRAPH

INDUSTRY GRAPH

☺ STANDARD OF LIVING GRAPH

☹ UNEMPLOYMENT GRAPH

◐ TIME SCALE

井 MAP SCREEN

Use the Cursor Keys to highlight the chosen TERRAIN PAINTING FUNCTION. Move the brush with the Joystick, and press the Joystick Button to paint.

You can paint rivers over open ground or trees. You cannot paint trees on water.

You can modify a randomly generated Terrain, or clear one using CLEAR MAP and design your ideal Terrain from scratch.

You can also use these functions to modify the Terrain in and around an existing city, adding trees or rivers.

> ****WARNING**** When adding trees or rivers to an existing city, be careful not to paint over buildings, zones, roadways or other structures. They will be destroyed.

EXIT returns you to the TERRAIN MENU.

THE GRAPH SCREEN

The GRAPH SCREEN gives you time-based graphs of various city data. You may view graphs for time periods of either the last ten years or the last 40 years.

THE GRAPH AREA
The GRAPH AREA is the main, upper portion of the GRAPHS SCREEN. This is where the actual graphs are displayed.

THE TIME LINE
The TIME LINE is just below the GRAPH AREA. It gives a reference in years to the graphs. Negative numbers indicate years into the past. Zero is the present time.

THE TITLE BAR
The TITLE BAR gives a message or explanation of each item on the GRAPH MENU.

THE GRAPH MENU
To select an item on the GRAPH MENU, highlight it with the Cursor Keys and press the Return Key. Like all other SimCity menus, if you force the highlight off one side of the menu, it will wrap around to the other side.

Up to five graphs can be viewed at one time. An active graph will have a small square below its Icon. The square is the color of the graph.

Graphs can be cleared either by changing the TIME SCALE or exiting the GRAPHS SCREEN.

POPULATION GRAPH shows the changes in the Residential Population over time.

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EDIT SCREEN

EDIT
MAP

TITLE
BAR

EDIT SCREEN

COST   1000   FUNDS   4000

EDIT
SCREEN
MENU

COST
BAR

FUNDS
BAR

🚜 BULLDOZER		⚷ PARKS	
🚶 ROADS		⚓ SEA PORTS	
🗼 POWER LINES		🏭 POWER PLANTS	
🌉 WATERWAYS		✈ AIRPORTS	
🏠 RESIDENTIAL ZONES		✳ MAP SCREEN	
🏢 COMMERCIAL ZONES		⚡ DISASTER MENU	
🏭 INDUSTRIAL ZONES			
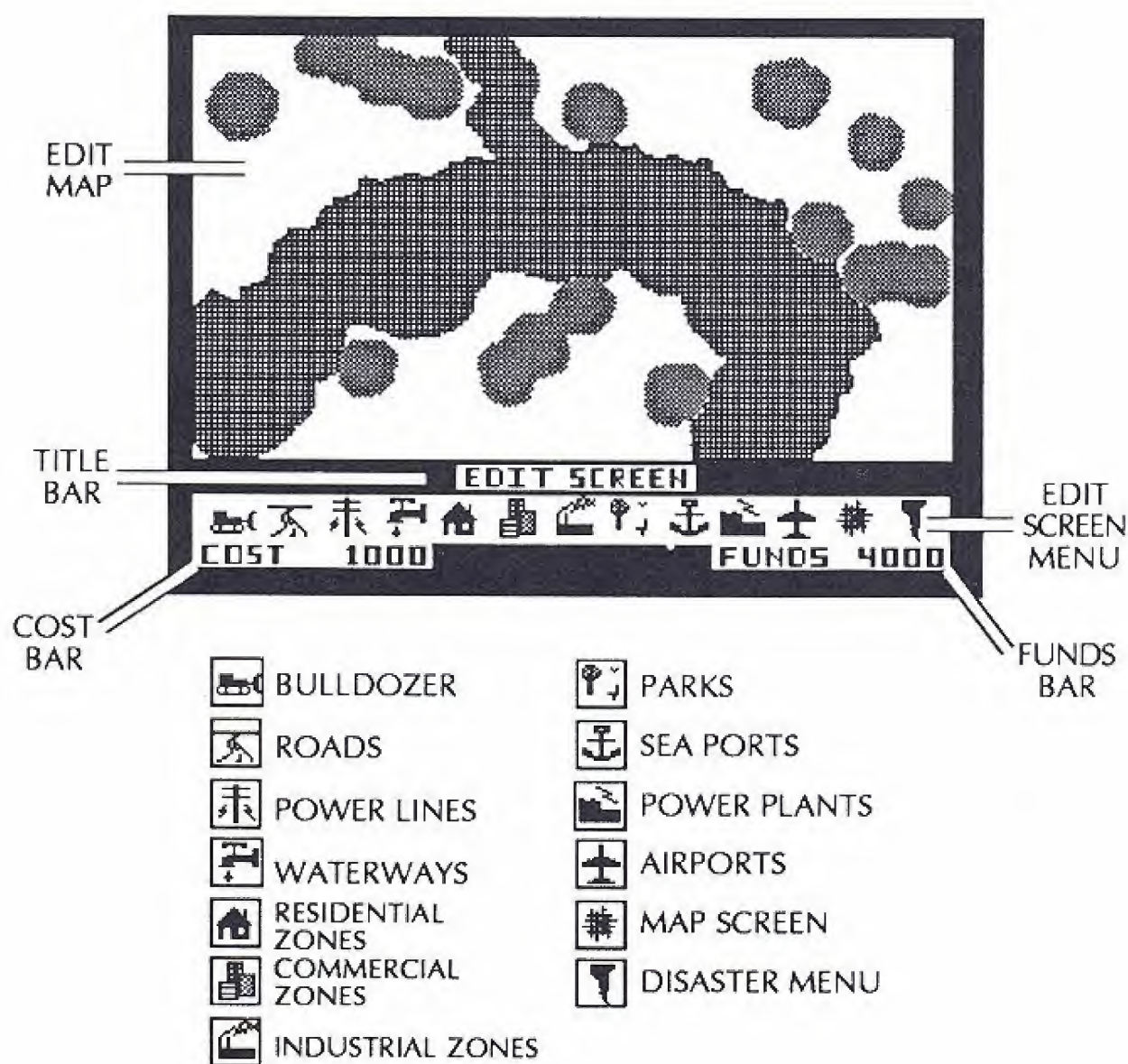
COMMERCIAL GRAPH shows the changes in Commercial Population over time.

INDUSTRY GRAPH shows the changes in Industrial Population over time.

STANDARD OF LIVING GRAPH displays the change in the Resident's living standard over time.

UNEMPLOYMENT GRAPH displays the Unemployment rate in the city over time.

The TIME SCALE function toggles the time period displayed in the graphs between ten years and forty years. Use the Cursor Keys to highlight TIME SCALE and press Return to toggle from one time scale to the other. Pressing Return again will toggle the scale
back again.

Using this function will clear all displayed graphs.

MAP SCREEN returns you to the MAP SCREEN.

THE EDIT SCREEN

The EDIT SCREEN, accessed through the MAP SCREEN MENU, is where the actual zoning and building takes place.

NOTE Your duty as Mayor and City Planner is primarily one of zoning. You decide where you want Residential Zones, Commercial Zones, Industrial Zones, Airports, Seaports, etc., and zone those areas. The actual building is done by the Sims. The speed at which they build and the types of buildings they build depends on the quality of the city you have designed.

THE EDIT MAP
The EDIT MAP is the major upper portion of the EDIT SCREEN. This is your work area. A close-up of the area in the EDIT RECTANGLE on the MAP SCREEN is displayed here.

TERRAIN
There are three types of terrain on the EDIT MAP.

The grey area is open land, where you can zone and build.

The green areas are trees and forests. You cannot zone or build on green areas. You may Bulldoze trees and forests to turn it into grey, clear land. While some bulldozing is necessary, clearing away too much green area will result in lower property values.

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The blue area is water. You cannot zone or build on water. You must bulldoze coastlines to create landfills before you can build or zone there.

Roads and power lines can be laid across water, with no turns or intersections.

NOTE New trees will occasionally sprout and grow in the grey, clear land.

THE TITLE BAR
Below the EDIT MAP is the TITLE BAR. This displays titles and explanations for items on the EDIT SCREEN MENU. This area is also used to display messages to you, such as notifying you that taxes have been collected.

COST BAR
Each function costs money. As you highlight a function, its cost appears in the lower left corner of the EDIT SCREEN in the COST BAR.

FUNDS BAR
Your available funds will be reported in the lower right hand corner of the EDIT SCREEN in the FUNDS BAR. If you try to activate a function when you don't have sufficient funds, you will receive the message "NOT ENOUGH FUNDS" in the TITLE BAR, and the function will not activate.

New cities have $4000 to begin with. The maximum amount of money that can be displayed in the funds bar is just over $65,000. Any money your city collects above that amount is siphoned off to charities and State and Federal taxes (or embezzled by dishonest politicians).

EDIT SCREEN CONTROLS

THE CURSOR KEYS
The Cursor Keys are used to highlight menu choices.

THE JOYSTICK
The Joystick is used to scroll the terrain around under the EDIT MAP.

THE JOYSTICK BUTTON
The Joystick Button is used to activate the highlighted EDITING FUNCTION.

THE EDIT SCREEN MENU
The EDIT SCREEN MENU provides you with the tools you need to design, zone and build your city. From here you can also activate the DISASTER MENU to select and activate a natural disaster.

EDITING FUNCTIONS
To activate EDITING FUNCTIONS, highlight the item with the Cursor Keys. The title or explanation of each function will appear in the TITLE BAR.

All editing is done in the very center of the EDIT MAP. As you highlight an EDITING FUNCTION, a POINTER will appear on the screen to show the location and size of the chosen function. You cannot move the location of the POINTER. You must use the Joystick to scroll the terrain so the desired location is under the POINTER. Use the Joystick Button to activate the function.

If you try to place a zone, road, power line, etc., on an existing zone, road, power line, etc., or over water or trees, you will receive the message "THAT AREA IS OCCUPIED" in the TITLE BAR, and the function will not operate. You will have to choose another site or bulldoze the area to clear it for zoning.

> ****NOTE** There are exceptions to the above rule: Power Lines and Roads can cross water, and can cross each other.**

BULLDOZER clears trees and forests, creates landfill along the water, levels developed, existing zones and clears rubble caused by disasters. BULLDOZERS can also be used to fight fires.

BULLDOZING one section of terrain costs $1.

ROADS connect developed areas. Zones cannot fully develop without an adjacent road. Intersections and turns are automatically created. You can lay continuous roads by holding down the Joystick Button while using the Joystick to scroll the terrain. Be careful - if you accidentally lay a road in the wrong place you will have to pay for bulldozing and rebuilding.

Roads may not be placed over trees, forests or zoned areas. They can cross over Power Lines only at right angles.

Laying roads across water creates a bridge. Bridges can only be built in a straight line - no curves, turns or intersections. Shorelines must be bulldozed prior to building a bridge.

When laying a road or bridge over water or power lines you will see the message "THAT AREA IS OCCUPIED" in the TITLE BAR. As long as you meet the requirements in the above two paragraphs, road building will not be impaired.

Building one section of ROAD costs $4.

POWER LINES carry power from power plants to zoned land and between zones. All developed land needs power to function.

Power Lines cannot cross trees, forests, or zoned land. Power is conducted through adjacent zones. Unpowered zones display the flashing letter "P". There is a delay between the time you connect power to a zone and when the "P" disappears. The delay grows longer as the city grows larger.

Junctions and corners are automatically created. Lay continuous power lines by holding down the Joystick Button while using the Joystick to scroll the terrain.

Power lines across water must be horizontal or vertical - no turns, curves or intersections. Shorelines must be bulldozed before placing power lines on them.

When laying a power line over water, road or bridge you will see the message "THAT AREA IS OCCUPIED" in the TITLE BAR. As long as you meet the requirements in the above two paragraphs, power line laying will not be impaired.

Laying one section of POWER LINE costs $1.

WATERWAYS add to your city's "Quality of Life" and will raise property values. This is not a plumbing system and does not need to be connected to every zone. It is a "nicety" that residents enjoy as you would enjoy having a stream on or near your property.

These man-made Waterways will not stop fires from spreading, but will slow them down. Waterways can also be strategically placed so they can be Bulldozed as a fire break in an emergency.

Laying one section of WATERWAY costs $2.

RESIDENTIAL ZONES are where the Sims build houses, apartments and community facilities such as schools and churches.

Factors influencing residential value and growth are pollution, traffic density, population density, surrounding terrain, roadway access, parks and utilities.

It costs $100 to zone one plot of land as RESIDENTIAL.

COMMERCIAL ZONES are used for many things, including retail stores, office buildings, parking garages and gas stations.

Factors influencing the value and growth of commercial areas include internal markets, pollution, traffic density, residential access, labor supply, airports, road access and utilities.

It costs $100 to zone one plot of land as COMMERCIAL.

INDUSTRIAL ZONES are for heavy manufacturing and industrial services.

Factors influencing industrial growth are external markets, sea ports, transit access, residential access, labor supply and utilities.

It costs $100 to zone one plot of land as INDUSTRIAL.

PARKS, like forest and water, raise the land value of surrounding zones.

It costs $40 to zone one PARK.

SEA PORTS increase the potential for industrial growth. They have little effect in a small city, but contribute a lot to industrialization in a large city.

Sea Ports should be placed on a shoreline. The shoreline must be bulldozed prior to zoning a Sea Port.

It costs $1000 to zone land for use as a SEA PORT.

POWER PLANTS provide power to your city. All zoned land needs power to develop and grow. When developed land loses power, it will degenerate to barren ground unless power is restored.

Since power is necessary to all city growth, and no taxes can be collected until there is some growth, a Power Plant should be the top priority in budgeting a new city.

Depending on the number of zones in your city, one Power Plant may not be able to supply enough power for the entire city. You may need two or three Power Plants for a very dense city. It is also recommended that once your city can afford it, you build one or two spare power plants as back up systems in case of damage by natural disasters.

It costs $2000 to build one POWER PLANT.

AIRPORTS increase the growth potential of you commercial markets. Once a city starts getting large, commercial growth will level off without an Airport.

Airports are large and expensive and should not be built unless your city can afford one. Once you build an Airport you will see planes take off and fly across the city.

It costs $4000 to zone land for use as an AIRPORT.

NON-EDITING FUNCTIONS
To activate these functions, highlight with the Cursor Keys and Press the Return Key.

MAP SCREEN returns you to the MAP SCREEN.

DISASTER MENU takes you to the DISASTER MENU.

DISASTER MENU

FIRE	TORNADO	MONSTER	EARTHQUAKE	EXIT

The DISASTER MENU, accessed through the EDIT SCREEN MENU, allows you to set natural disasters loose in your city. Use these disasters to test your ability to deal with emergencies in your city or just to release some aggression.

WARNING It is a good idea to save your city to disk before you set a disaster loose - just in case.

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Use the Cursor Keys to highlight and choose a Disaster selection. Use the Joystick to choose the Disaster's location. Press the Return Key or the Joystick Button to activate the Disaster.

FIRE starts a Fire at the POINTER's location. Fire spreads fairly rapidly through forests and buildings, somewhat slower over roadways and man-made waterways. Fire will not cross natural water or clear land. Fire leaves behind rubble that must be bulldozed before you can re-zone or rebuild.

You can use your Bulldozer to make a fire break of clear land around a fire to contain it, and can even use it to directly attack the fire. It is a good idea to place Parks and Waterways strategically so they can be bulldozed for fire breaks in emergencies.

Fires are also caused by Earthquakes.

Fires are saved to disk with the city: if you save a city in which a fire is burning, when you reload it, the fire will take up where it left off.

TORNADOS can be activated anywhere on the map. Very fast and unpredictable, they appear and destroy everything in their path, leaving behind a trail of rubble.

Tornados can last a long time and there is no way to fight them. About all you can do is follow at a safe distance, and try to keep the power going to as many zones as possible until it stops and you can clear the rubble and rebuild.

Tornados will not be saved with a city: if you save a city with an active Tornado, when you reload the city at a later time, the Tornado will be gone.

> ****WARNING**** Tornados stay with the Simulation. If you have an active Tornado in your city, and load in another city, or create a new terrain, the Tornado will still be in the same location as in the old city. The only way to get rid of a Tornado without waiting for it to leave is to turn off the computer and re-load SimCity.

MONSTERS, once activated, wander the city leaving death and destruction in their wake.

Monsters can hang around for a long time and don't leave until they are good and ready. About all you can do is follow at a safe distance, and try to keep the power going to as many zones as possible until it stops and you can clear the rubble and rebuild.

Monsters will not be saved with a city: if you save a city with an active Monster, when you reload the city at a later time, the Monster will be gone.

WARNING Monsters stay with the Simulation. If you have an active Monster in your city, and load in another city, or create a new Terrain, the Monster will still be in the same location as in the old city. The only way to get rid of a Monster without waiting for it to leave is to turn off the computer and re-load SimCity.

EARTHQUAKES are the most devastating disaster. This is a MAJOR Earthquake - between 8.0 and 9.0 on the Richter Scale. It will destroy buildings and start fires.

When an Earthquake occurs, you will see the EDIT SCREEN shake for a while. When it stops, fires will break out all over the city.

Use the bulldozer to contain the largest fires first and work your way down to the smaller ones.

EXIT returns you to the EDIT MENU. Highlight EXIT and press the Return Key or the Joystick Button to activate.

SCENARIOS

Included on the Program Disk are eight Scenario Cities to explore, learn from and try to save. Each Scenario City will have either a design flaw or an impending disaster. Some will be easy, and some will be nearly impossible. The object is to help the city recover from disaster, and reach a profitable existence as quickly as possible.

WARNING After loading in and working on a Scenario, and you wish to save it to work on later, be sure to save it under a different name, and preferably on a different disk than the original Scenario, or your original will be lost.

Test your planning expertise and your ability to overcome disasters with these Scenarios.

DULLSVILLE, USA 1900 - BOREDOM
BACKGROUND
Things haven't changed much around here in the last hundred years or so and the residents are beginning to get bored. They think Dullsville could be the next great city with the right leader. It is your job to attract new growth and development, turning Dullsville into a Metropolis by the 21st century.
INSTRUCTIONS
Load in Dullsville and start zoning, bulldozing, and re-zoning.

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SAN FRANCISCO, CA 1906 - 8.0 EARTHQUAKE
BACKGROUND
Damage from the earthquake was minor compared to that of the ensuing fires, which took days to control.
INSTRUCTIONS
Load in San Francisco, then activate an Earthquake from the DISASTER MENU. Once the city stops shaking your initial concern is to control the fires. Stop the larger fires first. Once fires are under control, clear the rubble with the Bulldozer and start rebuilding.

HAMBURG, GERMANY 1944 - FIRE
BACKGROUND
Allied fire-bombing of German Cities in WWII caused tremendous devastation and loss of life. People living in the inner cities were at greatest risk.
INSTRUCTIONS
Load in Hamburg and, using the DISASTER MENU, start fires in 12 places to simulate the bombing of the city. Allow approximately 2 minutes for fires to spread (and to be sure the bombers are gone) then control the fires and rebuild the city. Try placing more fires and/or letting them spread longer to make this Scenario more difficult.

BERN, SWITZERLAND 1965 - TRAFFIC
BACKGROUND
The roads here are becoming more congested with automobile traffic every day, and the residents are upset. They demand you do something about it.
INSTRUCTIONS
Load in Bern, and start Bulldozing, re-zoning, and road building.

TOKYO, JAPAN 1957 - MONSTER
BACKGROUND
A large reptilian creature appeared in Tokyo and rampaged through the city, destroying everything in its path.
INSTRUCTIONS
Load in Tokyo and, using the DISASTER MENU, set a Monster loose in the center of the city. Follow the Monster (at a safe distance) and try to restore power to the zones it has damaged. Then, when the Monster is gone, clean up the rubble with the Bulldozer, and begin the rebuilding process.

DETROIT, MI 1972 - RECESSION
BACKGROUND
By 1970, competition from overseas and other economic factors pushed the once "automobile capital of the world" into recession. Plummeting land values and unemployment increase in the inner-city. Industry has deteriorated to the point that the city can produce almost no revenue.
INSTRUCTIONS
Load in Detroit, and zone some new Industrial sections.

BOSTON, MA 2010 - TORNADO
BACKGROUND
Suffering from damage to industry and commerce by a major Tornado, the residents are leaving town, looking for a new start. Your job as Mayor of Boston is to clear the damage in the city, rebuild the city services and re-zone for residence, commerce, and industry before you are left the Mayor of a "ghost town."
INSTRUCTIONS
Load Boston and, from the DISASTERS MENU, set a Tornado loose in the center of the city. Wait for it to disappear, then clean up the mess and rebuild the city.

RIO de JANEIRO, BRAZIL 2047 - CHANGING TIMES
BACKGROUND
For decades Rio was a world class playground for rich and poor alike. It generated great amounts of money by providing services to visitors and tourists (commercial services). As the times changed, Rio fell out of vogue and tourism declined. You, as Mayor must restructure the economic basis of your city from primarily commercial to a balance of commercial and industrial, and provide living space for the industrial workers.
INSTRUCTIONS
Load in Rio de Janeiro. You will find an overabundance of commercial zones. You must clear many of these out and re-zone for more industry and residence for a more balanced city economy.

MESSAGES FROM THE SIMULATION

During the course of SimCity, you will receive messages from the simulation. These are meant to warn or inform you. They appear in the TITLE BAR.

Most messages are simple and self-explanatory, but a few, listed here may need clarification.

"TAXES COLLECTED" notifies you that a year in simulated time has passed and you have received your tax funds for the year. The new revenues will be added to your existing funds, and the new total will be displayed in the FUNDS BAR at the bottom right of the EDIT SCREEN.

"NOT ENOUGH FUNDS" warns you that your existing funds are too low to allow you to perform the highlighted EDITING FUNCTION. You will have to find some less costly function to perform, or wait until you have collected enough taxes to proceed.

"THAT AREA IS OCCUPIED" notifies you that the area in the present EDIT SCREEN INDICATOR is not clear land.

This message will be displayed for a short time after you place a zone to indicate that the area is no longer clear and is now occupied by the zone you have just created.

It will be displayed if you try to zone or place roads or power lines over trees, forests, water, roads, power lines, shoreline or existing zones. In this case you will not be allowed to complete the zoning or building function.

Exceptions to the above paragraph are: roads and power lines can be placed over water, (only in a straight line - no turns, curves or intersections) and can cross each other perpendicularly. In these cases the message will be displayed, but will not hinder construction.

SIMULATION HINTS AND TIPS

DISK USE
The Program Disk that comes with SimCity is copy protected. To make it last as long as possible, use it only to load in the simulation, then remove it and use other disks for holding your city data.

Use a copy utility to copy the included Scenario City files to another disk, or load SimCity, load the city, switch to the data disk, and save the city to the new disk. Repeat this for each included city.

It is a good idea to make back up copies of city data disks.

SAVING CITIES AND TERRAINS
Be careful not to name two cities the same, or you could accidentally save one city over another, and one will be lost. If you wish to save one city in different stages of development, or try two or more expansion plans for one city, save each version under a different name.

If you like a randomly generated terrain, or have designed a good terrain using the TERRAIN EDIT MENU and want to try different approaches to city building on it, you may save the empty terrain even before you have built on it. When you do build on it, save your new city under a different name than the empty terrain, or your empty terrain will be lost.

BUDGETING
Since you start a new city with limited funds ($4000) you must plan and budget carefully. A Power Plant should be a first priority, since without power there can be no city growth and therefore no taxes.

GROWING A CITY
Refer often to the USER REFERENCE CARD. The MENU MAP helps you find your way around SimCity's menus and screens, and the CITY DYNAMICS chart explains how all the factors relating to city growth are related.

The main points to keep in mind when trying to grow a city are:

All zones must be powered to develop.

Zones must be developed to generate tax money.

Roads must provide access to and from each zone for it to fully develop.

Airports and Sea Ports won't help a small city grow - so save your money until the city gets larger.

Place zones, roads, etc. carefully - they cannot be moved, and you will have to pay to bulldoze them and rebuild.

As a rule of thumb, the number of Industrial Zones and Commercial Zones should be about the same. The number of Residential Zones should be approximately equal to the sum of Commercial and Industrial Zones.

Proximity to forest and water increases land value, which increases the taxes collected.

Extra Power Plants and redundant Power Lines are expensive, but can keep zones from losing power during a Disaster or emergency and deteriorating.

A bigger, more populous city is not necessarily better. Having a self-supporting, profitable city with pleasant surroundings is better than a huge city that is always broke and has no forest or shoreline.

Use the various Maps and Graphs to plan city growth, locate problems and track your progress.

Save your city to disk before trying any major new policy so you can go back if your plan doesn't work.

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INSIDE SIMCITY

HOW THE SIMULATOR WORKS

Many factors influence the chance of your city's prospering or floundering: both internal factors (the structure and efficiency of your city) and external factors (the regional economy, disasters, etc.).

ZONES

Your city is divided into three primary zones: residential, commercial and industrial. These zones symbolize the three basic pillars upon which a city is based: population, industry, and commerce. All three are necessary for your city to grow and thrive.

RESIDENTIAL ZONES are where the Sims live. Here they build houses, apartments and community facilities such as churches and schools. Sims are the work force for your city's commercial and industrial zones.

INDUSTRIAL ZONES are used to site warehouses, factories, and other unsightly and polluting structures which have a negative impact on surrounding zones. One of the major goals of planning is to separate these "nuisances" from the areas where people live. In this simulation, industrial zones represent the "basic" production of your city. Things produced here are sold outside the city to an "external market," bringing money into the city for future growth.

COMMERCIAL ZONES represent the retail stores and services in your city, including gas stations, grocery stores, banks, and offices. Commercial areas are mainly dedicated to producing goods and services needed within your city. This is called "non-basic" production or production for the "internal market".

POPULATION - RESIDENTIAL

The major factors controlling residential population are birthrate, availability of jobs and housing, unemployment, and quality of life within the city.

Birthrate as used here, is actually a combination of the birthrate (+) and the deathrate (-). Within SimCity there is always a positive birthrate.

Availability of jobs (the employment rate) is a ratio of the current commercial and industrial populations to the total residential population. As a rule of thumb, the number of commercial and industrial zones together should roughly equal the number of residential zones.

If there are more jobs in your city than residents, new settlers will be attracted. If the job market declines during a local recession, your people will migrate away in search of jobs.

Housing for your residents is built in the residential zones. These zones must be powered and connected to the places of employment by roads. The structures built in residential zones are influenced by land value and population density.

Quality of life is a measure of relative "attractiveness" assigned to different zone locations. It is affected by negative factors such as pollution and crime, and positive factors such as parks and accessibility.

EXTERNAL MARKET - INDUSTRIAL

There are thousands of variables that influence your city. All these variables can be influenced by your actions with the exception of one.

The external market (the economic conditions that exist outside of your city) is controlled by the simulation - there is nothing you can do to change it. In many ways, this external market is the original source of all city growth. Towns frequently begin as production centers (steel towns, refineries, etc.) that service a demand in the surrounding region. As time passes, the external market grows to reflect the regional growth going on around your city.

The industry in your city will attempt to grow as the external market grows. For this to happen there must be room for expansion (more industrial zones) and an adequate labor supply (more residential zones).

INTERNAL MARKET - COMMERCIAL

The internal market is completely influenced by the conditions within your city. Internal production, created in the commercial zones, represents all the things which are purchased and consumed within the city. Food stores, gas stations, retail stores, financial services, medical care, etc. - all depend on a nearby population to service. Within SimCity, the size of the internal market determines the rate at which commercial zones will prosper. Commercial zones need enough zoned land to build on and an existent, sufficient work force to employ. The structures built in commercial zones are mainly influenced by land value and population density.

Commercial zones grow and develop to serve the expanding internal market. Commercial growth will usually be slow at first, when the population is small and needs very little. As your city grows, commercial growth will accelerate and the internal market will become a much larger consumer of your total city production. This accelerating effect, when the external/industrial production is overtaken by the accelerating internal/commercial sector, can turn a sleepy little town of 50,000 into a thriving capital of 200,000 in a few short years.

POWER

Electrical power makes modern cities possible. Efficient and reliable power transmission to all zones is the goal of good "power management".

Periodically in the simulation the entire power grid of your city is checked for links to power. If a zone is connected (by other zones or power lines) to a power plant,

the zone is considered powered. You may notice a small black square that appears and disappears below the EDIT SCREEN MENU. The presence of this square indicates that a power check is in progress. In a larger city, the power check takes longer, and there is more time between checks, so don't worry if it takes a couple minutes for a zone to respond after you have powered it up.

If your zone is properly hooked up, and, after a complete power check, is still not responding, then you may need to build another Power Plant.

Zones must be powered for development to occur. Many things (such as fires, tornadoes, earthquakes and bulldozers) can knock down power lines and cause blackouts in parts of your city. Development will stop in unpowered zones, and if power is not quickly restored, the zone will decline back to its original state of emptiness.

Sometimes damaged zones that have lost power can be partially re-powered, but usually they will need to be completely cleared and re-zoned.

Redundant Power Plants and power connections can make your power grid more reliable, but running more line adds construction costs.

TRANSPORTATION - TRAFFIC

One of the most important elements of city structure is the transportation network. It moves Sims and goods throughout your city. Roads typically occupy as much as 25% - 40% of the land in urban areas. Traffic along these roads indicates which sections of your road system are used the most.

Traffic levels are simulated by a process known as "Trip Generation." Over time, each populated zone in the city will generate a number of trips, depending on the population. Each generated trip starts at the origin zone, travels down the road, and if a "proper destination" is reached, ends at the destination zone - otherwise, the trip fails. Trip failure indicates inaccessibility of a zone and limits its growth.

The majority of generated trips represent people commuting to and from work. Additional traffic is generated by residents traveling to shopping, recreation, etc.

Each road has a limited capacity for traffic. When this capacity is exceeded traffic jams will form. Traffic jams drastically lower the capacity of a road, compounding the problem and frustrating drivers.

Traffic conditions fluctuate quickly. Avoid traffic problems by providing several routes for the traffic to take.

POLLUTION

Pollution levels are tracked in all areas of your city. This is a general "nuisance level" which includes air and water pollution, noise pollution, toxic wastes, etc. Pollution has a negative impact on the growth of residential areas.

The primary cause of pollution is industrialized zones. The level of pollution created by an industrial zone increases with its level of growth.

Traffic is another cause of pollution. There are limited means of combating the pollution level. Lowering traffic density, limiting industrial development, and separating the pollution from the residential areas will help.

LAND VALUE

Land value is one of the most fundamental aspects of urban structure. The land value of an area affects how that area is used. In this simulation the land value of an area is based on terrain, accessibility, pollution, and distance to downtown.

The farther the residents have to go to work, the lower the land value where they live, due in part to transportation costs. The value of commercial zones depends greatly on accessibility by the populace.

Land value is also affected by surrounding terrain. If land is closer to water, trees or parks, its value will rise. Creative placement of zones within the terrain, with little bulldozing, can make good use of this natural advantage.

HISTORY OF CITIES AND CITY PLANNING
by Cliff Ellis

INTRODUCTION

The building of cities has a long and complex history. Although city planning as an organized profession has existed for less than a century, all cities display various degrees of forethought and conscious design in their layout and functioning.

Early humans led a nomadic existence, relying on hunting and gathering for sustenance. Between 8,000 and 10,000 years ago, systematic cultivation of plants and the domestication of animals allowed for more permanent settlements. During the fourth millennium B.C., the requirements for the "urban revolution" were finally met: the production of a surplus of storable food, a system of writing, a more complex social organization, and technological advances such as the plough, potter's wheel, loom, and metallurgy.

Cities exist for many reasons, and the diversity of urban forms can be traced to the complex functions that cities perform. Cities serve as centers of storage, trade, and manufacture. The agricultural surplus from the surrounding countryside is processed and distributed in cities. Cities also grew up around marketplaces, where goods from distant places could be exchanged for local products. Throughout history, cities have been founded at the intersections of transportation routes, or at points where goods must shift from one mode of transportation to another, as at river and ocean ports.

Religious elements have been crucial throughout urban history. Ancient peoples had sacred places, often associated with cemeteries or shrines, around which cities grew. Ancient cities usually had large temple precincts with monumental religious buildings. Many medieval cities were built near monasteries and cathedrals.

Cities often provided protection in a precarious world. During attacks, the rural populace could flee behind city walls, where defense forces assembled to repel the enemy. The wall served this purpose for millennia, until the invention of heavy artillery rendered walls useless in warfare. With the advent of modern aerial warfare, cities have become prime targets for destruction rather than safe havens.

Cities serve as centers of government. In particular, the emergence of the great nation-states of Europe between 1400 and 1800 led to the creation of new capital cities or the investing of existing cities with expanded governmental functions.

Washington, D.C., for example, displays the monumental buildings, radial street pattern, and large public spaces typical of capital cities.

Cities, with their concentration of talent, mixture of peoples, and economic surplus, have provided a fertile ground for the evolution of human culture: the arts, scientific research, and technical innovation. They serve as centers of communication, where new ideas and information are spread to the surrounding territory and to foreign lands.

CONSTRAINTS ON CITY FORM

Cities are physical artifacts inserted into a preexisting natural world, and natural constraints must be respected if a settlement is to survive and prosper. Cities must conform to the landscape in which they are located, although technologies have gradually been developed to reorganize the land to suit human purposes. Moderately sloping land provides the best urban site, but spectacular effects have been achieved on hilly sites as San Francisco, Rio de Janeiro, and Athens.

Climate influences city form. For example, streets have been aligned to take advantage of cooling breezes, and arcades designed to shield pedestrians from sun and rain. The architecture of individual buildings often reflects adaptations to temperature, rainfall, snow, wind and other climatic characteristics.

Cities must have a healthy water supply, and locations along rivers and streams, or near underground watercourses, have always been favored. Many large modern cities have outgrown their local water supplies and rely upon distant water sources diverted by elaborate systems of pipes and canals.

City location and internal structure have been profoundly influenced by natural transportation routes. Cities have often been sited near natural harbors, on navigable rivers, or along land routes determined by regional topography.

Finally, cities have had to survive periodic natural disasters such as earthquakes, hurricanes, tornados, and floods. The San Francisco earthquake of 1906 demonstrated how natural forces can undo decades of human labor in a very short time.

ELEMENTS OF URBAN STRUCTURE

City planners must weave a complex, ever-changing array of elements into a working whole: that is the perennial challenge of city planning. The physical elements of the city can be divided into three categories: networks, buildings, and open spaces. Many alternative arrangements of these components have been tried throughout history, but no ideal city form has ever been agreed upon. Lively debates about the best way to arrange urban anatomies continue to rage, and show no signs of abating.

NETWORKS
Every modern city contains an amazing array of pathways to carry flows of people, goods, water, energy, and information. Transportation networks are the largest and most visible of

these. Ancient cities relied on streets, most of them quite narrow by modern standards, to carry foot traffic and carts. The modern city contains a complex hierarchy of transportation channels, ranging from ten-lane freeways to sidewalks. In the United States, the bulk of trips are carried by the private automobile, with mass transit a distant second. American cities display the low-density sprawl

characteristic of auto-centered urban development. In contrast, many European cities have the high densities necessary to support rail transit systems.

Modern cities rely on complex networks of utilities. When cities were small, obtaining pure water and disposing of wastes was not a major problem, but cities with large populations and high densities require expensive public infrastructure. During the nineteenth century, rapid urban growth and industrialization caused overcrowding, pollution, and disease in urban areas. After the connection between impure water and disease was established, American and European cities began to install adequate sewer and water systems. Since the late nineteenth century, cities have also been laced with wires and conduits carrying electricity, gas, and communications signals.

BUILDINGS
Buildings are the most visible elements of the city, the features that give each city its unique character. Residential structures occupy almost half of all urban land, with the building types ranging from scattered single-family homes to dense high-rise apartments. Commercial buildings are clustered downtown and at various subcenters, with skyscrapers packed into the central business district and low-rise structures prevailing elsewhere, although tall buildings are becoming more common in the suburbs. Industrial buildings come in many forms ranging from large factory complexes in industrial districts to small workshops.

City planners engage in a constant search for the proper arrangement of these different types of land use, paying particular attention to the compatibility of different activities, population densities, traffic generation, economic efficiency, social relationships, and the height and bulk of buildings.

OPEN SPACES
Open space is sometimes treated as a leftover, but it contributes greatly to the quality of urban life. "Hard" spaces such as plazas, malls, and courtyards provide settings for public activities of all kinds. "Soft" spaces such as parks, gardens, lawns, and nature preserves provide essential relief from harsh urban conditions and serve as space for recreational activities. These "amenities" increasingly influence which cities will be perceived as desirable places to live.

EVOLUTION OF URBAN FORM
The first true urban settlements appeared around 3,000 B.C. in ancient Mesopotamia, Egypt, and the Indus Valley. Ancient cities displayed both "organic" and "planned" types of urban form. These societies had elaborate religious, political, and military hierarchies. Precincts devoted to the activities of the elite were often highly planned and regular in form. In contrast, residential areas often grew by a slow process of accretion, producing the complex, irregular patterns that we term "organic." Two typical features of the ancient city are the wall and the citadel: the wall for defense in regions periodically swept by conquering armies, and the citadel – a large, elevated precinct within the city – devoted to religious and state functions.

Greek cities did not follow a single pattern. Cities growing slowly from old villages often had an irregular, organic form, adapting gradually to the accidents of topography and history. Colonial cities, however, were planned prior to settlement using the grid system. The grid is easy to lay out, easy to comprehend, and divides urban land into uniform rectangular lots suitable for development.

The Romans engaged in extensive city-building activities as they consolidated their empire. Rome itself displayed the informal complexity created by centuries of organic growth, although particular temple and public districts were highly planned. In contrast, the Roman military and colonial towns were laid out in a variation of the grid. Many European cities, including London and Paris, sprang from these Roman origins.

We usually associate medieval cities with narrow winding streets converging on a market square with a cathedral and city hall. Many cities of this period display this pattern, the product of thousands of incremental additions to the urban fabric. However, new towns seeded throughout undeveloped regions of Europe were based upon the familiar grid. In either case, large encircling walls were built for defense against marauding armies; new walls enclosing more land were built as the city expanded and outgrew its former container.

During the Renaissance, architects began to systematically study the shaping of urban space, as though the city itself were a piece of architecture which could be given an aesthetically pleasing and functional order. Many of the great public spaces of Rome and other Italian cities date from this era. Parts of old cities were rebuilt to create elegant squares, long street vistas, and symmetrical building arrangements. Responding to advances in firearms during the fifteenth century, new city walls were designed with large earthworks to deflect artillery, and star-shaped points to provide defenders with sweeping lines of fire. Spanish colonial cities in the New World were built according to rules codified in the Laws of the Indies of 1573, specifying an orderly grid of streets with a central plaza, defensive wall, and uniform building style.

We associate the baroque city with the emergence of great nation-states between 1600 and 1750. Ambitious monarchs constructed new palaces, courts, and bureaucratic offices. The grand scale was sought in urban public spaces: long avenues, radial street networks, monumental squares, geometric parks and gardens. Versailles is a clear expression of this city-building model; Washington, D.C. is an example from the United States. Baroque principles of urban design were used by Baron Haussmann in his celebrated restructuring of Paris between 1853 and 1870. Haussmann carved broad new thoroughfares through the tangled web of old Parisian streets, linking major subcenters of the city with one another in a pattern which has served as a model for many other modernization plans.

Toward the latter half of the eighteenth century, particularly in America, the city as a setting for commerce assumed primacy. The buildings of the bourgeoisie expanded along with their owners' prosperity: banks, office buildings, warehouses, hotels, and small factories. New towns founded during this period were conceived as commercial enterprises, and the neutral grid was the most effective means to divide land up into parcels for sale. The city became a checkerboard on which players speculated on shifting land values. No longer would religious, political, and cultural imperatives shape urban development; rather, the market would be allowed to determine the pattern of urban growth. New York, Philadelphia, and Boston around 1820 exemplify the commercial city of this era, with their bustling, mixed-use waterfront districts.

TRANSITION TO THE INDUSTRIAL CITY

Cities have changed more since the Industrial Revolution than in all the previous centuries of their existence. New York had a population of about 313,000 in 1840 but had reached 4,767,000 in 1910. Chicago exploded from 4,000 to 2,185,000 during the same period. Millions of rural dwellers no longer needed on farms flocked to the cities, where new factories churned out products for new markets made accessible by railroads and steamships. In the United States, millions of immigrants from Europe swelled the urban populations. Increasingly, urban economies were being woven more tightly into the national and international economies.

Technological innovations poured forth, many with profound impacts on urban form. Railroad tracks were driven into the heart of the city. Internal rail transportation systems greatly expanded the radius of urban settlement: horsecars beginning in the 1830s, cable cars in the 1870s, and electric trolleys in the 1880s. In the 1880s, the first central power plants began providing electrical power to urban areas. The rapid communication provided by the telegraph and the telephone allowed formerly concentrated urban activities to disperse across a wider field.

The industrial city still focused on the city center, which contained both the central business district, defined by large office buildings, and substantial numbers of factory and warehouse structures. Both trolleys and railroad systems converged on the center of the city, which boasted the premier entertainment and shopping establishments. The working class lived in crowded districts close to the city center, near their places of employment.

Early American factories were located outside of major cities along rivers which provided water power for machinery. After steam power became widely available in the 1830s, factories could be located within the city in proximity to port facilities, rail lines, and the urban labor force. Large manufacturing zones emerged within the major northeastern and midwestern cities such as Pittsburgh, Detroit, and Cleveland. But by the late nineteenth century, factory decentralization had already begun, as manufacturers sought larger parcels of land away from the congestion of the city. Gary, Indiana, for example, was founded in 1906 on the southern shore of Lake Michigan by the United States Steel Company.

The increasing crowding, pollution, and disease in the central city produced a growing desire to escape to a healthier environment in the suburbs. The upper classes had always been able to retreat to homes in the countryside. Beginning in the 1830s, commuter railroads enabled the upper middle class to commute in to the city center. Horsecar lines were built in many cities between the 1830s and 1880s, allowing the middle class to move out from the central cities into more spacious suburbs. Finally, during the 1890s electric trolleys and elevated rapid transit lines proliferated, providing cheap urban transportation for the majority of the population.

The central business district of the city underwent a radical transformation with the development of the skyscraper between 1870 and 1900. These tall buildings were not technically feasible until the invention of the elevator and steel-frame construction methods. Skyscrapers reflect the dynamics of the real estate market; the tall building extracts the maximum economic value from a limited parcel of land. These office buildings housed the growing numbers of white-collar employees in banking, finance, management, and business services, all manifestations of the shift from an economy of small firms to one of large corporations.

THE FORM OF THE MODERN CITY IN THE AGE OF THE AUTOMOBILE

The city of today may be divided into two parts: (1) an inner zone, coextensive with the boundaries of the old industrial city, and (2) suburban areas, dating from the 1920s, which have been designed for the automobile from the beginning.

The central business districts of American cities have become centers of information processing, finance, and administration rather than manufacturing. White-collar employees in these economic sectors commute in from the suburbs on a network of urban freeways built during the 1950s and 60s; this "hub-and-wheel" freeway pattern can be observed on many city maps. New bridges have spanned rivers and bays, as in New York and San Francisco, linking together formerly separate cities into vast urbanized regions.

Waves of demolition and rebuilding have produced "Manhattanized" downtowns across the land. During the 1950s and 60s, urban renewal programs cleared away large areas of the old city, releasing the land for new office buildings, convention centers, hotels, and sports

complexes. Building surges have converted the downtowns of American cities into forests of tall office buildings. More recently, office functions not requiring a downtown location have been moved to huge office parks in the suburbs.

Surrounding the central business area lies a large band of old mixed-use and residential buildings which house the urban poor. High crime, low income, deteriorating services, inadequate housing, and intractable social problems plague these neglected areas of urban America. The manufacturing jobs formerly available to inner city residents are no longer there, and resources have not been committed to replace them.

These inner city areas have been left behind by a massive migration to the suburbs, which began in the late nineteenth century but accelerated in the 1920s with the spread of the automobile. Freeway building after World War II opened up even larger areas of suburban land, which were quickly filled by people fleeing central city decline. Today, more people live in suburbs than in cities proper. Manufacturers have also moved their production facilities to suburban locations which have freeway and rail accessibility.

Indeed, we have reached a new stage of urbanization beyond the metropolis. Most major cities are no longer focused exclusively on the traditional downtown. New subcenters have arisen round the periphery, and these subcenters supply most of the daily needs of their adjacent populations. The old metropolis has become a multi-centered urban region. In turn, many of these urban regions have expanded to the point where they have coalesced into vast belts of urbanization – what the geographer Jean Gottman termed "megalopolis." The prime example is the eastern seaboard of the United States from Boston to Washington. The planner C.A. Doxiadis has speculated that similar vast corridors of urbanization will appear throughout the world during the next century. Thus far, American planners have not had much success in imposing a rational form on this process. However, New Town and greenbelt programs in Britain and the Scandinavian countries have, to some extent, prevented formless sprawl from engulfing the countryside.

THE ECONOMICS OF URBAN AREAS

Since the 1950s, city planners have increasingly paid attention to the economics of urban areas. When many American cities experienced fiscal crises during the 1970s, urban financial management assumed even greater importance. Today, planners routinely assess the economic consequences of all major changes in the form of the city.

Several basic concepts underlie urban and regional economic analysis. First, cities cannot grow if their residents simply provide services for one another. The city must create products which can be sold to an external purchaser, bringing in money which can be reinvested in new production facilities and raw materials. This "economic base" of production for external markets is crucial. Without it, the economic engine of the city grinds to a halt.

Once the economic base is established, an elaborate internal market can evolve. This market includes the production of goods and services for businesses and residents within the city. Obviously, a large part of the city's physical plant is devoted to facilities for these internal transactions: retail stores of all kinds, restaurants, local professional services, and so on.

Modern cities are increasingly engaged in a competition for economic resources such as industrial plants, corporate headquarters, high-technology firms, and government facilities. Cities try to lure investment with an array of features: low tax rates, improved transportation and utility infrastructure, cheap land, and a skilled labor force. Amenities such as climate, proximity to recreation, parks, elegant architecture, and cultural activities influence the location decisions of businesses and individuals. Many older cities have had difficulty surviving in this new economic game. Abandoned by traditional industries, they are now trying to create a new economic base involving growth sectors such as high technology.

Today, cities no longer compete in mere regional or national markets: the market is an international one. Multinational firms close plants in Chicago or Detroit and build replacements in Asia or Latin America. Foreign products dominate whole sectors of the American consumer goods market. Huge sums of money shift around the globe in instantaneous electronic transactions. Cities must struggle for survival in a volatile environment in which the rules are always changing. This makes city planning even more challenging than before.

MODERN CITY PLANNING

Modern city planning can be divided into two distinct but related types of planning. Visionary city planning proposes radical changes in the form of the city, often in conjunction with sweeping changes in the social and economic order. Institutionalized city planning is lodged within the existing structures of government, and modifies urban growth processes in moderate, pragmatic ways. It is constrained by the prevailing alignment of political and economic forces within the city.

VISIONARY OR UTOPIAN CITY PLANNING

People have imagined ideal cities for millennia. Plato's Republic was an ideal city, although lacking in the spatial detail of later schemes. Renaissance architects designed numerous geometric cities, and ever since architects have been the chief source of imaginative urban proposals. In the twentieth century, Le Corbusier, Frank Lloyd Wright, Paolo Soleri, and dozens of other architects have designed cities on

paper. Although few have been realized in pure form, they have influenced the layout of many new towns and urban redevelopment projects.

In his "Contemporary City for Three Million People" of 1922 and "Radiant City" of 1935, Le Corbusier advocated a high-density urban alternative, with skyscraper office buildings and mid-rise apartments placed within park-like open spaces. Different land uses were located in separate districts, forming a rigid geometric pattern with a sophisticated system of superhighways and rail transit.

Frank Lloyd Wright envisioned a decentralized low-density city in keeping with his distaste for large cities and belief in frontier individualism. The Broadacre City plan of 1935 is a large grid of arterials spread across the countryside, with most of the internal space devoted to single-family homes on large lots. Areas are also carefully set aside for small farms, light industry, orchards, recreation areas, and other urban facilities. A network of superhighways knits the region together, so spatially dispersed facilities are actually very close in terms of travel time. In many ways, Wright's Broadacre City resembles American suburban and exurban developments of the post-WWII period.

Many other utopian plans could be catalogued, but the point is that planners and architects have generated a complex array of urban patterns from which to draw ideas and inspiration. Most city planners, however, do not work on a blank canvas; they can only make incremental changes to an urban scene already shaped by a complicated historical process.

INSTITUTIONALIZED CITY PLANNING

The form of the city is determined primarily by thousands of private decisions to construct buildings, within a framework of public infrastructure and regulations administered by city, state, and federal governments. City planning actions can have enormous impacts on land values. From the point of view of land economics, the city is an enormous playing field on which thousands of competitors struggle to capture value by constructing or trading land and buildings. The goal of city planning is to intervene in this game in order to protect widely shared public values such as health, safety, environmental quality, social equity, and aesthetics.

The roots of American city planning lie in an array of reform efforts of the late nineteenth century: the Parks movement, the City Beautiful movement, campaigns for housing regulations, the Progressive movement for government reform, and efforts to improve public health through the provision of sanitary sewers and clean water supplies. The First National Conference on City Planning occurred in 1909, the same year as Daniel Burnham's famous Plan of Chicago. That date may be used to mark the inauguration of the new profession. The early city planners actually came from diverse backgrounds such as landscape architecture, architecture, engineering, and law, but they shared a common desire to produce a more orderly urban pattern.

The zoning of land became, and still is, the most potent instrument available to American city planners for controlling urban development. Zoning is basically the dividing of the city into discrete areas within which only certain land uses and types of buildings can be constructed. The rationale is that certain activities or building types don't mix well; factories and homes, for example. Illogical mixtures create nuisances for the parties involved and lower land values. After several decades of gradual development, land-use zoning received legal approval from the Supreme Court in 1926.

Zoning isn't the same as planning: it is a legal tool for the implementation of plans. Zoning should be closely integrated with a Master Plan or Comprehensive Plan which spells out a logical path for the city's future in areas such as land use, transportation, parks and recreation, environmental quality, and public works construction. In the early days of zoning this was often neglected, but this lack of coordination between zoning and planning is less common now.

Two other important elements of existing city planning are subdivision regulations and environmental regulations. Subdivision regulations require that land being subdivided for development be provided with adequate streets, sewers, water, schools, utilities, and various design features. The goal is to prevent shabby, deficient developments which produce headaches for both their residents and the city. Since the late 1960s, environmental regulations have exerted a stronger influence on patterns of urban growth by restricting development in floodplains, on unstable slopes, on earthquake faults, or near sensitive natural areas. Businesses have been forced to reduce smoke emissions and the disposal of wastes have been more closely monitored. Overall, the pace of environmental degradation has been slowed, but certainly not stopped, and a dismaying backlog of environmental hazards remains to be cleaned up. City planners have plenty of work to do as we move into the twenty-first century.

CONCLUSION: GOOD CITY FORM

What is the good city? We are unlikely to arrive at an unequivocal answer; the diversity of human needs and tastes frustrates all attempts to provide recipes or instruction manuals for the building of cities. However, we can identify the crucial dimensions of city performance, and specify the many ways in which cities can achieve success along these dimensions.

A most useful guide in this enterprise is Kevin Lynch's *A Theory of Good City Form* (Cambridge, Mass. MIT Press, 1981). Lynch offers five basic dimensions of city performance: vitality, sense, fit, access, and control. To these he adds two "meta-criteria," efficiency and justice.

For Lynch, a vital city successfully fulfills the biological needs of its inhabitants, and provides a safe environment for their activities. A sensible city is organized so that its residents can perceive and understand the city's form and function. A city with good fit provides the buildings, spaces, and networks required for its residents to pursue their projects successfully.

An accessible city allows people of all ages and backgrounds to gain the activities, resources, services, and information that they need. A city with good control is arranged so that its citizens have a say in the management of the spaces in which they work and reside.

Finally, an efficient city achieves the goals listed above at the least cost, and balances the achievement of the goals with one another. They cannot all be maximized at the same time. And a just city distributes benefits among its citizens according to some fair standard. Clearly, these two meta-criteria raise difficult issues which will continue to spark debates for the foreseeable future.

These criteria tell aspiring city builders where to aim, while acknowledging the diverse ways of achieving good city form. Cities are endlessly fascinating because each is unique, the product of decades, centuries, or even millennia of historical evolution. As we walk through city streets, we walk through time, encountering the city-building legacy of past generations. Paris, Venice, Rome, New York, Chicago, San Francisco – each has its glories and its failures. In theory, we should be able to learn the lessons of history and build cities that our descendants will admire and wish to preserve. That remains a constant challenge for all who undertake the task of city planning.

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Residential Population	+				+		+		+
Commercial Population	+				+		+		+
Industrial Population	+		+		+		+		+
Population Density									
Traffic			+	+					−
Pollution		−						−	−
Land Value	+							+	+
Trees - Parks		+							
Water		+							
Proximity to City Center		+							
Unemployment								+	−
Sea Port						+			
Airport							+		
Roads		+							

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- Negative Effect

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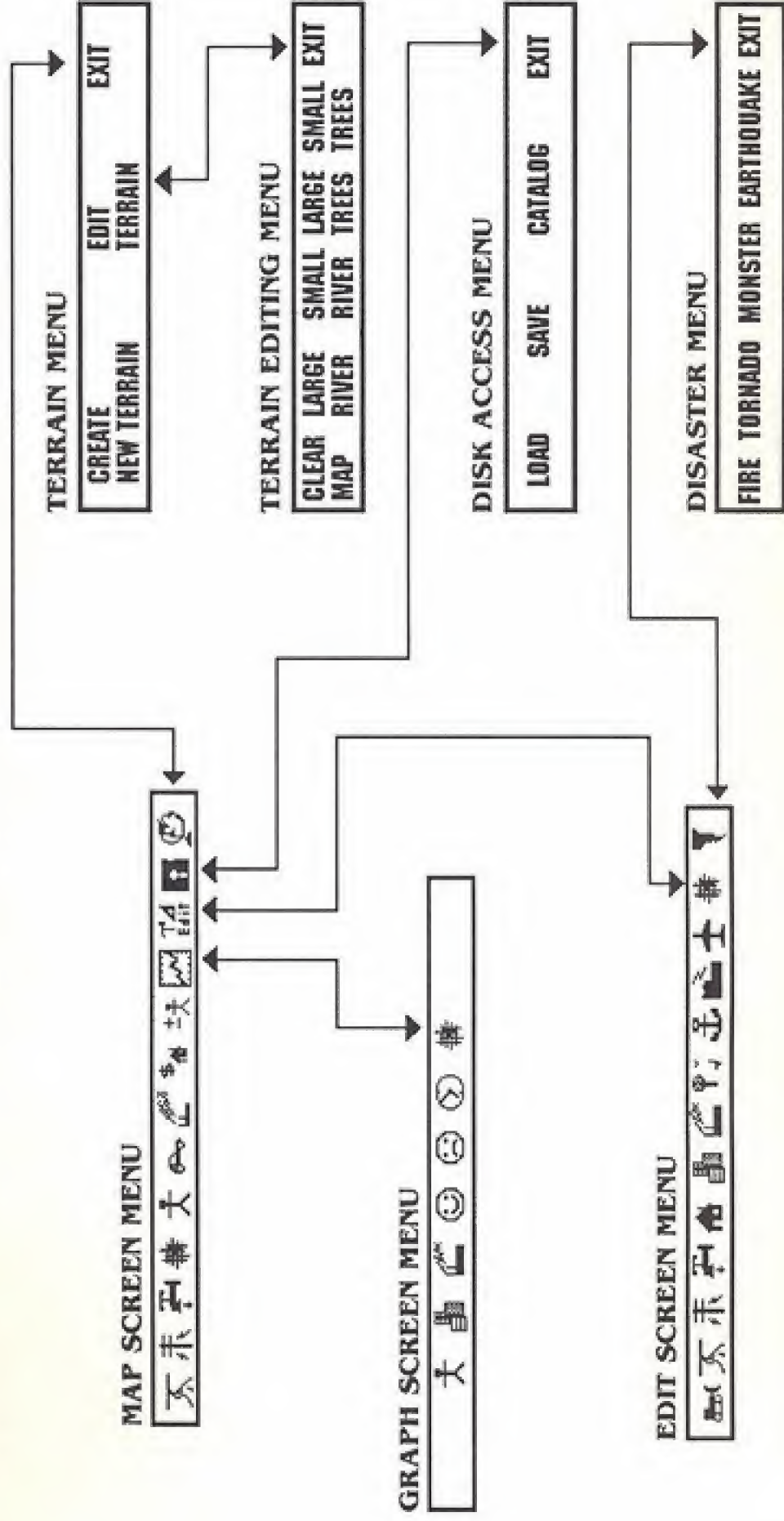
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